

Mexican data for July, 1898.

Stations.	Altitude.	Mean barometer.	Temperature.			Relative humidity.	Precipitation.	Prevailing direction.	
			Max.	Min.	Mean.			Wind.	Cloud.
Durango (Seminario)	6,243	24.07	82.4	51.8	68.5	51	5.77	.....	e
Leon (Guadalupe)	5,934	24.32	84.4	55.4	67.1	66	9.41	ese.	e, ne.
Linares (New Leon)	1,188	28.69	102.2	69.8	84.3	63	0.08	se.	se.
Magdalena (Sonora)	2,618	.....	95.9	72.0	86.0	.....	7.72	s.	n, ne.
Mexico (Obs. Cent.)	7,472	23.09	76.5	52.5	61.5	68	4.88	nw.	ne.
Morelia (Seminario)	6,401	23.99	78.8	52.2	64.2	74	6.75	sw, sw.	e.
Oaxaca	5,164	25.09	88.0	53.1	69.6	72	4.44	nw.	e.
Saltillo	5,399	24.89	92.3	59.0	74.7	77	3.70	sw.	n.
Tuxpan (Vera Cruz)	30.19	96.8	70.2	82.4	79	2.93	e.	n, w.	e.
Zacatecas	8,015	22.53	77.0	48.2	60.4	59	5.74	e.	e.

OBSERVATIONS AT HONOLULU.

Through the kind cooperation of Mr. Curtis J. Lyons, Meteorologist to the Government Survey, a copy of the daily record at Honolulu is communicated to the Weather Bureau in advance of its official publication, and is herewith printed, as a special contribution, for the convenience of those who are studying the relations of the storms and weather of the United States to those of adjacent countries, with a view to long-range, seasonal predictions.

Meteorological observations at Honolulu.

JULY, 1898.

July, 1898.	Pressure at sea level.			Temperature.				Relative humidity.			Wind.		Cloudiness.	Rain measured at 6 a. m.
	7 a. m.	3 p. m.	9 p. m.	6 a. m.	2 p. m.	9 p. m.	Maximum.	Minimum.	7 a. m.	2 p. m.	9 p. m.	Direction.	Force.	
1	30.02	29.96	30.04	68	82	76	83	66	74	82	74	nne.	2-0	0.07
2	30.05	30.04	30.08	74	84	78	85	69	67	64	75	e-ne.	3	0.00
3	30.10	30.05	30.12	75	80	75	81	75	67	63	78	ene-nne.	4	0.00
4	30.10	30.04	30.09	75	76	74	81	71	74	78	80	ne.	2	0.04
5	30.06	29.99	30.04	72	81	74	81	70	82	58	70	ene-n.	3-0	0.11
6	30.04	30.02	30.07	67	82	76	83	66	74	53	70	ne.	3	0.02
7	30.08	30.04	30.09	73	82	75	83	71	70	58	74	ene-ne.	3	0.03
8	30.09	30.06	30.09	72	81	74	82	71	74	61	78	ne.	2-4	0.12
9	30.09	30.06	30.08	73	82	76	83	70	70	62	70	ne.	3-1	0.16
10	30.08	30.03	30.08	72	81	76	82	71	80	61	68	nne.	2-4	0.04
11	30.08	30.01	30.06	73	79	74	82	71	70	68	74	nne.	3-4	0.03
12	30.08	30.04	30.11	73	81	76	81	72	82	61	70	ne.	3	0.04
13	30.11	30.07	30.10	74	80	76	81	73	74	64	70	ene.	5	0.19
14	30.10	30.06	30.10	74	75	77	79	72	81	62	68	nne.	5	0.10
15	30.07	30.01	30.03	75	80	75	81	74	70	57	70	nne.	5-3	0.03
16	30.02	29.96	30.00	74	80	76	83	72	72	64	74	ne.	3	0.02
17	30.03	29.98	30.03	74	80	77	81	73	68	63	72	ene.	4-5	0.08
18	30.04	29.99	30.05	74	81	74	82	74	70	58	78	ne.	4-3	0.03
19	30.04	29.98	30.04	72	82	75	83	69	82	58	76	ne.	3	0.11
20	30.03	29.98	30.02	72	81	77	83	71	82	61	71	ne.	3	0.05
21	30.04	29.99	30.04	72	84	76	85	71	77	61	80	ene-ne.	3	0.00
22	30.02	29.99	30.04	76	79	76	82	73	74	70	70	ene.	3-4	0.04
23	30.05	30.02	30.06	75	78	76	83	74	74	73	76	ne.	5	0.02
24	30.07	30.02	30.04	75	81	75	82	73	78	61	74	ne.	5-6	0.09
25	30.06	30.03	30.07	75	81	76	83	73	70	60	70	nne.	3-5	0.01
26	30.07	30.01	30.03	75	81	76	82	74	70	60	68	ene.	4-5	0.00
27	30.02	29.97	30.04	74	82	76	82	71	74	56	70	nne.	4	0.13
28	30.04	29.99	30.06	75	80	77	83	73	70	61	68	ne.	4	0.00
29	30.04	29.97	30.04	76	81	75	83	75	70	60	82	ne.	3-0	0.00
30	30.04	29.97	30.04	74	81	78	83	72	82	67	73	ne.	1-4	0.06
31	30.03	30.00	30.07	76	82	78	83	74	76	65	73	ne.	3-4	0.01
Means	30.06	30.01	30.06	73.5	80.6	75.8	82.2	71.7	72.6	63.0	72.9	.....	3-4	1.63

The station is at 21° 18' N., 157° 50' W.; altitude 50 feet. Pressure is corrected for temperature and reduced to sea level, but the gravity correction, -0.06, is still to be applied.

The average direction and force of the wind and the average cloudiness for the whole day are given unless they have varied more than usual, in which case the extremes are given. The scale of wind force is 0 to 10. Two directions of wind, or values of wind force, connected by a dash, indicate change from one to the other.

The rainfall for twenty-four hours is given as measured at 6 a. m. on the respective dates.

The rain gauge, 8 inches in diameter, is 1 foot above ground. Thermometer, 8 feet above ground. Ground is 50 feet above sea level.

Monthly mean temperature (6 + 2 + 9) ÷ 3 is 76.6, and the normal mean is —. The normal rainfall for July is —.

OBSERVATIONS AT RIVAS, NICARAGUA.

The records contributed for many years by Dr. Earl Flint, at Rivas, Nicaragua, include barometric readings. His present station is at 11° 26' N., 85° 47' W. The observations at 7:17 a. m., local time are simultaneous with Greenwich 1 p. m. The

altitude of his barometer is 36 meters above sea level, but until the barometer has been compared with a standard it seems hardly necessary to publish the daily readings. The wind force is recorded on the Beaufort scale, 0-12. When cloudiness is less than $\frac{1}{10}$, the letter "F," or "Few," is recorded.

His station is situated on the western shore of Lake Nicaragua, not far from the eastern end of the western division of the Nicaragua Canal. The volcano Ometepe, on an island in Lake Nicaragua, is about 10 miles northeast of his station. Mr. Flint's records occasionally mention the presence of clouds in the early morning on the summit of this mountain.

Observations at Rivas, Nicaragua, June, 1898.

OBSERVATIONS AT 7 A. M. LOCAL (8 A. M. EASTERN STANDARD) TIME.

Date.	Temperature.		Wind.		Upper clouds.			Lower clouds.			Daily rainfall.
	Air.	Dew-point.	Direction.	Force.	Kind.	Amount.	Direction from.	Kind.	Amount.	Direction from.	
1	73	74	ne.	0	c.	1	sw.	ks.	1	ne.	0.00
2	75	73	nw.	0	cs.	3	sw.	.....	.....	.....	0.00
3	79	72	se.	0	cs.	1	se.	ks.	1	se.	0.00
4	78.5	72	se.	1	cs.	5	.....	ks.	1	se.	0.00
5	79	75	ne.	0	ck.	1	ne.	.....	.....	.....	0.00
6	80	74	ne.	0	.....	.....	.....	ks.	10	ne.	0.00
7	78	74	ne.	0	.....	.....	.....	ks.	10	ne.	0.04
8	81	76	se.	0	.....	.....	.....	ks.	10	se.	0.13
9	81	76	se.	0	c ²	10	se.	.....	.....	.....	0.15
10	82	76	se.	0	.....	.....	.....	ks.	10	se.	0.40
11	78	77	ne.	1	c.	Few	ne.	.....	.....	.....	0.00
12	79	74	se.	0	.....	.....	.....	ks.	5	se.	0.00
13	80	74	ne.	0	.....	.....	.....	ks.	10	ne.	0.16
14	79	72	se.	2	ck.	8	se.	ks.	8	se.	0.00
15	78	72	se.	1	ck.	10	sw.	.....	.....	.....	0.08
16	79.5	72	se.	1	cs; ck.	7	se.	.....	.....	.....	0.00
17	75.5	73	sw.	1	.....	.....	.....	n.	10	sw.	1.16
18	77	74	sw.	0	.....	.....	.....	ks.	10	se.	3.38
19	76	74	se.	0	ck.	10	se.	.....	.....	.....	1.26
20	77	73	se.	0	ck.	5	.....	se.	.....	.....	1.67
21	76	73	sw.	0	ck.	10	sw.	.....	.....	.....	0.00
22	74	72	sw.	0	ck.	10	sw.	.....	.....	.....	3.22
23	74	72	s.	0	ck.	10	sw.	.....	.....	.....	0.40
24	75	74	s.	0	ck.	10	s.	.....	.....	.....	0.40
25	77	73	sw.	0	ck.	10	sw.	.....	.....	.....	0.30
26	76	74	se.	0	cs.	10	se.	.....	.....	.....	0.00
27	75.5	73	sw.	0	.....	.....	.....	n.	10	sw.	4.72
28	74	70	sw.	0	.....	.....	.....	n.	10	sw.	1.18
29	75	73	sw.	0	.....	.....	.....	ks.	10	.....	0.00
30	77	73	nw.	0	cs.	10	.....	ks.	10	.....	0.00
Means ..	77.9	.....	.....	.....	.....	.....	.....	.....	.....	.....	18.95

OBSERVATIONS AT 8 P. M. LOCAL (9 P. M. EASTERN STANDARD) TIME.

Date.	Temperature.		Wind.		Upper clouds.			Lower clouds.		
	Air.	Dew-point.	Direction.	Force.	Kind.	Amount.	Direction from.	Kind.	Amount.	Direction from.
	°	°								
1.....	79	73	se.	0	c.	3	se.			
2.....	79	75	se.	0	c.	3	se.	ks.	2	se.
3.....	82	74	se.	1	c.	3	se.			
4.....	81	76	se.	1	c.	3	se.			
5.....	84	77	e.	0				ks.	8	e.
6.....	81	78	se.	0				ks.	4	se.
7.....	82	77	se.	0	ck	2	se.			
8.....	80	77	se.	0				ks.	10	se.
9.....	80	76	se.	1				ks.	10	se.
10.....	81	78	n.	0				ks.	10	n.
11.....	80	74	se.	0				ks.	0	se.
12.....	80	76	se.	0				ks ¹		se.
13.....	77	73	se.	2	ck ¹		se.			
14.....	78	71	se.	2-3	ck.	10	se.			
15.....	79	72	se.	0	ck ¹					
16.....	81	78	se.	0	ck.	5	se.			
17.....	78	75	sw.	0				ks.	10	sw.
18.....	78	78	sw.	0				ks.	10	sw.
19.....	78	77	se.	0				ks.	10	sw.
20.....	75	74	se.	0				n.	10	se.
21.....	75	75	sw.	0				n.	10	sw.
22.....	75	75	sw.	0				n.	10	sw.
23.....	78	78	s.	0				n.	10	sw.
24.....	76	73	s.	0				n.	10	sw.
25.....	70	73	nw.	1				n.	10	nw.
26.....	75	75	sw.	1				n.	10	sw.
27.....	74	71	sw.	0				n.	10	sw.
28.....	75	75	sw.	0				n.	10	sw.
29.....	77	73	se.	0				ks.	5	se.
30.....	77	73	se.	0				n.	10	se.
Means.....	78.4									

Observations at Rivas, Nicaragua, July, 1898.

OBSERVATIONS AT 7 A. M. LOCAL (8 A. M. EASTERN STANDARD) TIME.

Date.	Temperature.		Wind.		Upper clouds.			Lower clouds.			Daily rainfall.
	Air.	Dew-point.	Direction.	Force.	Kind.	Amount.	Direction from.	Kind.	Amount.	Direction from.	
1.....	78.	74.	se.	0	.....	.....	.....	n.	10	se.	0.00
2.....	75	73	se.	1	.....	.....	.....	n.	10	se.	1.42
3.....	76	74	se.	0	.....	.....	.....	n.	10	se.	0.40
4.....	77	73	ne.	0	.....	.....	.....	ks.	10	se.	0.00
5.....	77	73	ne.	1	cs.	2	se.	.....	.....	.....	0.00
6.....	78	74	sw.	0	.....	.....	.....	ks.	5	sw.	0.00
7.....	77	73	sw.	0	.....	.....	.....	n.	10	sw.	1.97
8.....	75	74	se.	0	.....	.....	.....	ks.	10	se.	0.00
9.....	75	74	sw.	0	.....	.....	.....	ks.	5	sw.	0.78
10.....	75	74	sw.	0	.....	.....	.....	ks.	10	sw.	0.40
11.....	74	71	sw.	0	.....	.....	.....	ks.	10	sw.	0.00
12.....	76	74	s.	0	.....	.....	.....	ks.	10	s.	0.00
13.....	75.5	72	sw.	0	.....	.....	.....	ks.	10	s.	0.00
14.....	76	73	s.	0	ck.	5	ne.	.....	.....	.....	0.00
15.....	78	73	se.	0	.....	.....	.....	k.	9	se.	0.00
16.....	78	73	se.	0	.....	.....	.....	k.	8	se.	0.00
17.....	79.5	71	se.	0	.....	.....	.....	k.	10	se.	1.18
18.....	79	76	s.	1	.....	.....	.....	k.	9	s.	0.86
19.....	75	72	se.	2	.....	.....	.....	k.	10	se.	0.18
20.....	76	70	ne.	0	.....	.....	.....	k.	10	ne.	0.00
21.....	76	70	ne.	1	.....	.....	.....	n.	10	ne.	0.80
22.....	77	73	se.	0	.....	.....	.....	ks.	10	se.	0.00
23.....	76	73	ne.	1	.....	.....	.....	n.	10	se.	0.40
24.....	77	74	ne.	2	.....	.....	.....	n.	10	ne.	0.00
25.....	79	75	ne.	2	cs.	10	ne.	ck.	10	ne.	0.20
26.....	78	75	ne.	1	.....	.....	.....	ks.	10	ne.	0.00
27.....	77	70	ne.	1	.....	.....	.....	ks.	10	ne.	0.40
28.....	77	73	e.	1	.....	.....	.....	k.	9	e.	0.00
29.....	76	73	e.	2	ck.	10	e.	.....	.....	.....	0.00
30.....	76	73	se.	1	.....	.....	.....	n.	10	se.	*3.86
31.....	75	73	ne.	0	.....	.....	.....	ks.	10	ne.	0.00
Means.....	76.6	.....	.....	.....	.....	.....	.....	.....	.....	.....	13.65

21st, light shock of earthquake, 11:55 p.

30th, excessive rain 3.86 inches in fifteen hours; * month, 13.65 inches, mean of eighteen years, 6.455.

* [As Mr. Flint's form credits this rainfall to the twenty-four hours preceding 7 a. m. of the 30th it is doubtful whether his reports adhere to the uniform rule of accrediting rainfall to the a. m. observation at the close of each daily period.—Ed.]

OBSERVATIONS AT 8 P. M. LOCAL (9 P. M. EASTERN STANDARD) TIME.

Date.	Temperature.		Wind.		Upper clouds.			Lower clouds.		
	Air.	Dew-point.	Direction.	Force.	Kind.	Amount.	Direction from.	Kind.	Amount.	Direction from.
1.....	78.	74.	se.	0	.....	.....	.....	n.	10	se.
2.....	75	73	ne.	1	.....	.....	.....	n.	10	ne.
3.....	76	74	ne.	1	ck.	0	ne.	.....	.....	.....
4.....	76	73	ne.	1	ck.	5	ne.	.....	.....	.....
5.....	78	75	ne.	1	ck.	5	ne.	.....	.....	.....
6.....	80	76	sw.	0	ck.	10	sw.	.....	.....	.....
7.....	75	74	sw.	0	ck.	10	sw.	.....	.....	.....
8.....	78	74	sw.	0	ck.	16	sw.	.....	.....	.....
9.....	77	73	sw.	0	.....	.....	.....	ks.	10	sw.
10.....	76	73	s.	0	.....	.....	.....	ks.	10	s.
11.....	77	73	s.	0	.....	.....	.....	ks.	10	s.
12.....	76	73	se.	0	.....	.....	.....	ks.	10	se.
13.....	79	73	s.	0	.....	.....	.....	ks.	10	s.
14.....	80	76	se.	0	.....	.....	.....	k.	5	s.
15.....	80	76	se.	1	.....	.....	.....	k.	8	s.
16.....	80	76	se.	1	.....	.....	.....	k.	10	se.
17.....	78	74	se.	0	.....	.....	.....	ks.	10	se.
18.....	78	74	se.	1	.....	.....	.....	ks.	10	se.
19.....	78	74	se.	1	.....	.....	.....	ks.	10	se.
20.....	77	73	ne.	1	.....	.....	.....	ks.	10	ne.
21.....	77	73	ne.	0	.....	.....	.....	k.	5	se.
22.....	77	74	ne.	0	.....	.....	.....	k.	10	se.
23.....	80	76	ne.	0	.....	.....	.....	k.	10	se.
24.....	80	76	ne.	0	.....	.....	.....	k.	Few	ne.
25.....	80	76	ne.	0	.....	.....	.....	ks.	5	ne.
26.....	76	73	ne.	1	.....	.....	.....	ks.	10	ne.
27.....	77	73	e.	1	.....	.....	.....	ks.	10	ne.
28.....	77	73	e.	1	ck.	7	e.	.....	.....	.....
29.....	79	73	se.	1	ck.	10	se.	.....	.....	.....
30.....	76	73	se.	0	.....	.....	.....	ks.	5	ne.
31.....	78	74	se.	0	ck.	10	se.	.....	.....	.....
Means.....	78.2	.....	.....	.....	.....	.....	.....	.....	.....	.....

CLIMATOLOGICAL DATA FOR JAMAICA, W. I.

Through the kindness of Mr. Maxwell Hall, of Montego Bay, Jamaica, the meteorological service of that colony com-

municates an abstract of the very interesting climatological records of that highly important West Indian service. The climatological summary furnished by Mr. Hall, through his assistant, Mr. Robert Johnstone, of the Meteorological Office, is reproduced in the following table. For descriptive details of the stations and instruments see Vol. XXV, pages 308 and 356.

Montego Bay, where Mr. Maxwell Hall resides, is between 4 and 5 miles west, and also the same distance north of Kempshot Observatory. The location of the latter is N. 18° 24' 50", W. 77° 52' 22". Stony Hill Reformatory is about 8 miles north of Kingston and within a mile to the west. Hope Gardens is between 3 and 4 miles to the north of Kingston, and about the same distance to the east. From these measurements the latitudes and longitudes given in the following table have been deduced:

Climatological data for Jamaica, W. I.

JUNE, 1898.

	Morant Point Lighthouse.	Negril Point Lighthouse.	Kingston.	Montego Bay.	Castleton Gardens.	Hope Gardens.	Stony Hill Reformatory.	Hill Gardens (Cin. Planet.).
Latitude.....	17° 56'	18° 16'	17° 58'	18° 30'	18° 12'	18° 02'	18° 06'	18° 05'
Longitude.....	76° 10'	76° 23'	76° 48'	77° 57'	76° 50'	76° 46'	76° 49'	76° 39'
Elevation (feet).....	8	33	50	160	580	600	1,400	4,907
Mean barometer { 7 a. m.....	29.937	29.937	29.940	29.943	29.964	.....	.....	25.232
{ 3 p. m.....	29.911	29.907	29.898	29.898	29.887	.....	.....	25.210
Mean temperature { 7 a. m.....	78.6	77.4	75.7	71.7	74.0	73.0	73.0	62.1
{ 3 p. m.....	83.1	84.9	83.3	82.7	82.7	80.0	80.0	66.2
Mean of maxima.....	86.8	87.8	86.6	88.1	87.0	85.8	85.8	70.0
Mean of minima.....	73.2	73.1	70.7	67.0	68.0	67.5	67.5	58.5
Highest (absolute) maximum.....	88.8	90.6	88.4	92	90	88	88	74
Lowest (absolute) minimum.....	67.9	70.0	68.3	63	64	65	65	55
Mean dew-point { 7 a. m.....	71.9	69.5	71.0	69.0	68.4	69.5	69.5	56.8
{ 3 p. m.....	73.5	71.1	73.5	74.3	71.0	74.9	74.9	61.8
Mean relative humidity { 7 a. m.....	80	77	86	88	81	89	81	81
{ 3 p. m.....	73	64	73	75	67	85	85	85
Monthly rainfall (inches).....	4.05	6.07	3.39	5.57	6.52	5.07	5.07	8.73
Average daily wind movement.....	325.5	61.1	53.9	.....	.....	.....	.....	41.5
Average wind direction { 7 a. m.....	*	†	ene.	.....	.....	.....	.....	e.
{ 3 p. m.....	e.	e. by s.	ene.	.....	.....	.....	.....	e.
Average hourly velocity { 7 a. m.....	6.9	7.0	1.2	1.8	.....	.....	.....	.....
{ 3 p. m.....	8.6	12.8	5.6	5.0	.....	.....	.....	.....
Average cloudiness (tenths):								
7 a. m. { Lower clouds.....	3.6	1.6	1.3	0.1	.....	.....	.....	.....
{ Middle clouds.....	1.8	1.2	0.8	0.2	.....	.....	.....	.....
{ Upper clouds.....	0.7	4.6	3.0	4.0	.....	.....	.....	.....
3 p. m. { Lower clouds.....	3.9	5.9	2.2	0.0	.....	.....	.....	.....
{ Middle clouds.....	1.7	2.3	1.4	6.1	.....	.....	.....	.....
{ Upper clouds.....	0.8	0.9	4.3	2.2	.....	.....	.....	.....

* e. by n.

† ne. by e.

TORNADO AT HAMPTON BEACH, N. H., JULY 4, 1898.

By ARTHUR E. SWEETLAND (dated August 4, 1898).

The report in the newspapers that a destructive tornado had visited Hampton, N. H., on July 4 led Mr. A. L. Rotch and the writer to visit the scene two days after the storm.

Hampton Beach is situated on the southeastern coast of New Hampshire, 2 miles southeast of Hampton, and near the boundary line of Massachusetts. The country to the north-west and west is covered by numerous small hills varying from 100 to 300 feet in height. In the immediate vicinity of the beach, where the greatest destruction took place, there is a large marsh (Hampton Marsh) on the northwest and west side and the ocean on the east side. The beach extends in a north-northeast to south-southwest direction. The track of the storm was across the marsh from Hampton and from the northwest. The tornado, which occurred at 3:30 p. m., caused its first damage on the road one-half mile southeast of Hampton, where it overturned a large tree, the tree falling in an east-northeast direction. The next damage was in a small orchard, where two small trees were blown down, falling, like the preceding one, from east-northeast. From here